DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-2, 6-9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. (6,460,378) in view of Yoshida et al. (4,812,154). Dong teaches a method for producing an optical component comprising feeding a coaxial arrangement comprising an outer jacket tube, inner jacket tube, and a core rod with its lower end sitting on an abutment in the internal bore of the inner jacket tube in vertical orientation to a heating zone, softening and elongating the coaxial arrangement to

obtain an optical component (figure 3, col. 5 lines 39-45, col. 6 lines 17-21, col. 6 lines 60-67, col. 7 lines 15-25). Dong utilizes a support (46) means that essentially provides for a constriction of the inner jacket tube creating an abutment for supporting the core rod within the internal bore of the inner jacket tube (figures 3a & 3b). Dong also shows a constriction that narrows the bore of the outer jacket tube as another means for supporting the core and inner jacket tube. Similarly, Yoshida discloses inserting a core rod into a first jacket tube, wherein the lower face end of the core rod sits on an abutment within the internal bore of the first jacket tube. Yoshida further teaches the abutment is configured as a constriction of the internal bore of the jacket tube with an axially continuous opening. It would have been obvious to one of ordinary skill in the art at the time of the invention to have alternatively utilized a constriction with an axially continuous opening in the inner jacket tube as a known alternative and equivalent means for supporting the core rod in the process of Dong since it has been demonstrated to yield the predictable result of holding the core rod within the inner jacket tube in a vertical fashion and successfully producing an optical component.

4. Regarding claim 6, Dong further teaches a mechanical stop (62) which prevents an upward movement of the core rod in a direction opposite a pulling direction (figure 3b).

5. Regarding claim 7, Dong teaches an annular gap between the core rod and inner jacket tube of 0.5mm (col. 5 lines 65 to col. 6 line 1).

6. Regarding claims 8 and 20, Dong teaches an annular gap between the inner jacket tube and the outer jacket tube of 0.5 mm (col. 6 lines 26-29).

7. Regarding claim 9, Dong teaches the inner jacket tube is movably held in a lateral direction (figure 3a, col. 6 lines 31-43).

8. Regarding claim 18, Dong teaches the outer jacket tube is provided with a downwardly tapering lower end (fig. 3a & 3b, col. 6 lines 22-25).

9. Claims 3 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. and Yoshida, as applied to claim 1 above, in further view of Fabian (2003/0140659). Regarding claim 3, Dong does not specially disclose the composition of the core rod. Fabian teaches a core preform comprising a core region surrounded by a cladding glass layer, wherein the ratio of the outer diameter of the cladding glass layer to the outer diameter of the core region is 2.39 ([0003]-[0008]). Having such a cladding layer of such dimensions reduces OH contamination from subsequent cladding layers and hence improves on the transmission of the resulting optical fiber. It also allows for a less expensive means for providing additional cladding to the preform for mechanical strength without influencing the optical properties of the fiber as much. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a similar core rod in the process of Dong and Yoshida as that of Fabian in order to reduce the cost of manufacturing while still producing an optical fiber with low transmission losses.

10. Regarding claim 15, Dong does not disclose a hydroxyl content of the inner jacket tube. Fabian teaches an inner jacket tube with a mean hydroxyl group content of less than 1 wt ppm ([0011]-[0013]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have similarly utilized an inner jacket tube with a

hydroxyl group content of less than 1 wt ppm in the process of Dong to minimize the hydroxyl content in the core and ensure an optical fiber product with low attenuation losses.

11. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. and Yoshida, as applied to claim 1 above, in further view of Dong et al. (EP 1 182 173). Dong and Yoshida do not disclose a core rod formed of butt-jointed core rod pieces. Dong '173 teaches forming a core rod by loosely stacking core rod pieces end to end or butt to butt for a rod-in-tube process (abstract, [0009], figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to have similar form the core rod in the process of Dong and Yoshida by butt-ending core rod pieces in order to manufacture a preform that is larger/longer and producing higher yields for optical fiber drawn therefrom.

12. Claims 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. and Yoshida, as applied to claim 1 above, in further view of Shimada et al. (EP 0994077). Dong and Yoshida do not disclose a holding cylinder for the outer jacket tube. Shimada teaches a holding cylinder of quartz glass fused onto the upper end of a jacket tube with a circumferential groove in which a gripper engages the holding cylinder ([0018]-[0019], figure 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a similar holding cylinder with a groove on the outer jacket tube of Dong in order to provide a means for handling the coaxially assembly why softening the assembly zone wise.

13. Further regarding claim 12, as just previously mentioned, Shimada teaches a first holding device that engages with the upper end of the inner jacket tube. Dong further teaches a second holding device that engages the upper end of the inner jacket tube (58) so that the inner jacket tube is held in place (figure 3a, col. 6 lines 31-43), wherein the first holding device and second holding device are mechanically independent of each other.

14. Further regarding claim 13, Dong discloses holding the upper end of the inner jacket tube on the outer jacket tube (figure 3a, col. 6 lines 31-43). Regarding claim 14, seal ring (58) is interpreted a mechanical extension of the inner jacket tube with an outer collar that rest on outer jacket tube (figure 3a).

15. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. and Yoshida, as applied to claim 1 above, in further view of Fabian et al. (2005/0117863). Dong does not offer specific details on the manufacturing of the jacket tubes. Fabian teaches a jacket tube produced by elongating a hollow cylinder which has been mechanically treated to a final dimension ([0015]). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized inner and outer jacket tubes in the process of Dong that has been mechanically treated to a final dimension in order to ensure the accurate alignment and fit of the core rod, resulting in a concentric arrangement of the core in the resulting fiber.

16. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dong et al. and Yoshida, as applied to claim 1 above, in further view of Glodis et al. (6,105,396). Dong teaches core rod can be made via conventional processes such as MCVD, but

fails to disclose the composition of the core rod. Glodis discloses a rod-in-tube process comprising of manufacturing a core rod via MCVD process, wherein the core rod comprises a core region surrounded by a cladding glass layer with a ratio of the outer diameter of the cladding glass layer to the outer diameter of the core region is approximately 3 (col. 2 lines 60 to col. 3 line 6). It would have been obvious to one of ordinary skill in the art at the time of the invention to have utilized a core with outer diameter ratio of about 3, as suggested by Glodis in the process of Dong in order to provide a cladding layer on the core region with sufficient thickness so as to prevent the migration of OH groups into the core.

Response to Arguments

17. Applicant's arguments filed December 18, 2009 have been fully considered but they are not persuasive. The applicant argues in embodiments comprising a single jacket tube or double jacket tubes, only the outer jacket tube is constricted. Both Dong and Yoshida teaches the commonality of providing for a constriction to support a core rod within an internal bore of a jacket tube. Both Dong and Yoshida teaches equivalent means for achieving this goal, either with support means (46) or a narrowing of the jacket tube. Therefore, both means are obvious alternatives of each other regardless of which jacket tube it is being utilized in. Furthermore, the support means (46) can be considered a constriction that narrows the bore of the inner jacket tube.

Conclusion

18. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to QUEENIE DEHGHAN whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 9:00am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/

Supervisory Patent Examiner, Art Unit 1791

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